

WHAT IS CLAIMED IS:

1. An indexable cutting insert for milling, the insert having a rectangular basic shape and comprising first and second opposite side surfaces intersected by first, second, third and fourth edge surfaces; the first and second edge surfaces lying opposite one another, and the third and fourth side surfaces lying opposite one another; the insert including four pairs of cutting edges, each pair of cutting edges including a major cutting edge and a minor cutting edge meeting at a respective cutting corner of the insert; two of the major cutting edges formed by transitions between the first side surface and the first and second edge surfaces, respectively, and the remaining two major cutting edges formed by transitions between the second side surface and the first and second edge surfaces, respectively; wherein the insert is a double-sided insert with the side surfaces constituting rake faces and the edge surfaces constituting flank faces; the first side surface having two of the cutting corners whose minor cutting edges are each formed by a transition between the first side surface and the third edge surface; the second side surface having two of the cutting corners whose minor cutting edges are each formed by a transition between the second side surface and the fourth edge surface; each of the first and second side surfaces intersected by a clamping cavity which defines a center axis; wherein a cutting corner of the first side surface located diagonally opposite a cutting corner of the second side surface defines therewith a bisector plane of the insert which plane substantially contains the center axis; the third and fourth edge surfaces providing positive clearance and being substantially parallel with one another.

2. The cutting insert according to claim 1, wherein a distance between the diametrically opposite cutting corners that define the bisector plane constitutes a longest dimension of the insert; the first and second edge surfaces providing negative clearance and being substantially parallel with one another.

3. The cutting insert according to claim 2 wherein each of the side surfaces has a generally concave shape to form a positive rake angle.

4. The cutting insert according to claim 3 wherein each of the third and fourth edge surfaces has a recess formed therein; wherein the recess of the third edge surface intersects the second side surface at a location between the two cutting corners disposed on the second side surface and has a depth increasing as such recess approaches the second side surface, the recess of the fourth edge surface intersecting the first side surface at a location between the two cutting corners disposed on the first side surface and having a depth increasing as such recess approaches the first side surface.

5. The cutting insert according to claim 2 wherein each of the third and fourth edge surfaces has a recess formed therein; wherein the recess of the third edge surface intersects the second side surface at a location between the two cutting corners disposed on the second side surface and has a depth increasing as such recess approaches the second side surface, the recess of the fourth edge surface intersecting the first side surface at a location between the two cutting corners disposed on the first side surface and having a depth increasing as such recess approaches the first side surface.

6. The cutting insert according to claim 1 wherein each of the side surfaces has a generally concave shape to form a positive rake angle.

7. The cutting insert according to claim 1 wherein each of the third and fourth edge surfaces has a recess formed therein; wherein the recess of the third edge surface intersects the second side surface at a location between the two cutting corners disposed on the second side surface and has a depth
5 increasing as such recess approaches the second side surface, the recess of the fourth edge surface intersecting the first side surface at a location between the two cutting corners disposed on the first and side surface and having a depth increasing as such recess approaches the first side surface.

8. The cutting insert according to claim 1 wherein each side surface
10 includes two elongated recesses extending on respective sides of the respective clamping cavity and intersecting respective ones of the third and fourth edge surfaces.

9. The cutting insert according to claim 1 wherein both of the clamping cavities are formed by a through-hole extending through the insert.

15 10. A milling tool comprising a rotary milling body in combination with indexable cutting inserts, the milling body defining an axis of rotation and including a plurality of circumferentially spaced insert pockets receiving respective cutting inserts; the first and second edge surfaces lying opposite one another, and the third and fourth edge surfaces lying opposite one
20 another; each cutting insert having a rectangular basic shape and comprising first and second opposite side surfaces intersected by first, second, third and fourth edge surfaces; the insert including four pairs of cutting edges spaced from the milling body, each pair of cutting edges including a major cutting edge and a minor cutting edge meeting at a respective cutting corner of the insert;
25 two of the major cutting edges formed by transitions between the first side surface and the first and second edge surfaces, and the remaining two major cutting edges formed by transitions between the second side surface and the

first and second edge surfaces; wherein the insert is a double-sided insert with the side surfaces constituting rake faces and the edge surfaces constituting flank faces; the first side surface having two of the cutting corners whose minor cutting edges are each formed by a transition between the first side surface and the third edge surface; the second side surface having two of the cutting corners whose minor cutting edges are each formed by a transition between the second side surface and the fourth edge surface; each of the first and second side surfaces intersected by a clamping cavity which defines a center axis; wherein a cutting corner of the first side surface located diagonally opposite a cutting corner of the second side surface defines therewith a bisector plane of the insert which substantially contains the center axis, the third and fourth edge surfaces providing positive clearance and being substantially parallel with one another.

11. The milling tool according to claim 10 wherein a distance between the diametrically opposite cutting corners that define the bisector plane constitutes a longest dimension of the insert; the first and second edge surfaces providing negative clearance and being substantially parallel with one another.

12. The milling tool according to claim 10 further including cassettes mounted in respective pockets, each cassette including a groove receiving a projection of the respective pocket.

13. The milling tool according to claim 12 wherein each of the side surfaces has a generally concave shape to form a positive rake angle.

14. The cutting insert according to claim 12 wherein each of the third and fourth edge surfaces has a recess formed therein; wherein the recess of the third edge surface intersects the second side surface at a location between the two cutting corners disposed on the second side surface and has a depth increasing as such recess approaches the second side surface, the recess of the fourth edge surface intersecting the first side surface at a location between the two cutting corners disposed on the side surface and having a depth increasing as such recess approaches the first side surface; each cassette including an axial support surface facing in a direction parallel to the axis of rotation and received in one of the recesses of a respective cutting insert.

15. The cutting insert according to claim 12 wherein each side surface includes two elongated recesses extending on respective sides of the respective clamping cavity and intersecting respective ones of the third and fourth edge surfaces; each side surface further including a planar surface disposed adjacent the elongated recesses and seated on a base surface defined by a respective cassette.

16. The cutting insert according to claim 10 wherein each of the third and fourth edge surfaces has a recess formed therein; wherein the recess of the third edge surface intersects the second side surface at a location between the two cutting corners disposed on the second side surface and has a depth increasing as such recess approaches the second side surface, the recess of the fourth edge surface intersecting the first side surface at a location between the two cutting corners disposed on the first side surface and having a depth increasing as such recess approaches the first side surface; the milling body including an axial support surface facing in a direction parallel to the axis of rotation and arranged stationarily relative to the milling body, the axial support surface received in one of the recesses of a respective cutting insert.

17. The cutting insert according to claim 10 wherein each side surface includes two elongated recesses extending on respective sides of the respective clamping cavity and intersecting respective ones of the third and fourth edge surfaces; each side surface further including a planar surface disposed adjacent the elongated recesses and seated on a base surface at a respective pocket.